

REMARKS

The Examiner rejected elected claims 1-3 under 35 USC §102 as being anticipated by Nagin. Applicant has cancelled claims 1-3.

The Examiner rejected claims 14, 15, 17, 18 and 35 under 35 USC §103 as being unpatentable over Nagin in view of Te'eni, and claim 16 over Nagin in view of Te'eni and Osborn.

The Invention

The invention claimed in amended claim 14 is a method of forming a wear-resistant, reinforcing coating on a substrate. This method includes steps that will form a composite on the substrate without the subsequently-hardened matrix material of the composite adhering substantially to the substrate. Such a method provides an end-product that has significant advantages over the Nagin composite, which teaches to adhere the composite to the underlying substrate. The advantages include that Applicant's method forms wear-resistant coatings that are easily replaced or repaired, yet conform to the substrate surface. Another advantage that arises from the lack of substantial adhesion is that small movements of the composite relative to the substrate are permitted. This relative movement is very important when temperatures reach extremes and the materials expand and contract at different rates. The fiber reinforcement in the invention prevents the wear-resistant coating from cracking.

The method comprises the steps of applying a liquid matrix material to the substrate, and disposing reinforcing fibers in the liquid matrix material. For example, the

matrix material can be a liquid epoxy resin that is simply poured onto the substrate and the fibers can be glass fibers in the form of a mat that is placed on the substrate before the resin is poured thereon, or mixed with the resin before or after pouring. Particulate, such as sand, is placed on the resin surface opposite the substrate, which is the top in floor applications. When the resin hardens, it forms a rigid matrix surrounding the fibers with particulate on the top for wear-resistance and traction.

In the amended claim 14, a membrane, which can be a plastic sheet, is interposed between the matrix material and the substrate to prevent the liquid resin from adhering substantially to the substrate. This lack of substantial adhesion, which leaves the substrate and the hardened composite essentially free to move relative to one another, is advantageous for reasons described above: removability, and accommodation of expansion and contraction differences between the materials.

The Prior Art

No other prior art reference teaches to place a membrane between a liquid matrix material that will form a wear-resistant coating and a substrate. Where they do, the membrane adheres to the substrate and the composite material, which is the opposite of Applicant's claimed method.

The Examiner stated that "Te'eni teaches to provide a flexible, corrosion protecting, and waterproofing membrane to surfaces of cement mortar or concrete surfaces, onto which is applied additional cementitious materials." The Examiner then elaborated "Since the membrane prevents migration of water and corrosive species, it

would also have necessarily prevented the liquid coating applied thereon from reaching, and adhering to, the substrate material.”

Te’eni teaches to bond membranes to reinforced concrete surfaces, not to prevent adhesion and leave the composite and membrane substantially unattached as Applicant now claims. For example, Te’eni teaches that “the protective membrane 10 [is] bonded to one face 11 of a reinforced concrete structure 12....” (col. 6, lines 35-36) In the same column, the Te’eni reference teaches that the membrane 10 has “fibrous surface layers 15, 16 on its opposite faces...” which are “pre-impregnated with a cementitious bonding material....” This membrane design is provided to permit the membrane 10 to be placed upon wet cement, which hydrates the bonding material and causes bonding with the wet cement. A subsequently-applied layer of cement hydrates the opposite fibrous surface layer, bonding to the next layer of cement. Thus, each side of the membrane is attached to the adjacent material, whether it be the substrate or the concrete applied thereon.

Te’eni teaches to bond the cement layer to the membrane, and bond the membrane to the substrate cement layer. This teaches away from Applicant’s method, which claims to **prevent attachment of the membrane to the substrate**. Applicant uses the membrane to keep the matrix material from contacting the substrate when the matrix material is in its uncured, liquid state. This, in turn, prevents any substantial adhesion of the membrane to the substrate.

The advantages of Applicant’s method, which are not recognized in the prior art, are that by keeping the composite and the substrate unattached, the composite remains relatively free to be replaced or repaired later. Additionally, the composite remains free

to expand and contract at a different rate than the substrate. Te'eni does not permit such differing rates of expansion and contraction, but actually teaches the opposite. Therefore, amended claim 14 would not have been obvious from the prior art. Instead, claim 14 is allowable, and all claims dependent thereon are allowable.

The Examiner cited Osborn as teaching a release agent between a composite and a substrate. Although claim 16 is allowable as being dependent upon amended claim 14, Applicant argues in addition that Osborn is non-analogous prior art, and therefore cannot be applied in the rejection at issue.

In a non-analogous art analysis, one must determine "whether the art is from the same field of endeavor, regardless of the problem addressed, and second, if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved." *In re Clay*, 966 F.2d 656, 658-659 (Fed. Cir. 1992).

The field of endeavor of the claimed method is a "wear-resistant reinforcing coating on a substrate." As described above, this is made by a process of placing a liquid matrix material on a substrate, interposing a membrane therebetween, placing fibers in the matrix material, placing particulate on the side of the matrix opposite the substrate and hardening the matrix material. The membrane prevents substantial adhesion of the matrix and the membrane to the substrate.

The Osborn patent teaches a polymer composition which is moldable. Osborn mentions that a release agent can be added to a mold to prevent adhesion of the polymer

to the mold during fabrication of molded products. Osborn does not teach wear-resistant coatings, but a polymer. Osborn is directed to a different field of endeavor: i.e., plastics.

Because Osborn is from a different field of endeavor, under *Clay*, attention must next be given to whether Osborn is "reasonably pertinent to the problem with which the inventor is involved." The court in *Clay* stated, "The purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve." *Id.* at 659.

The purpose of Osborn's polymer composition and the method claimed do not relate to solving the same problem. The purpose of Applicant's claimed invention is to form a wear-resistant coating on a substrate. By combining the claim steps, Applicant's method results in a coating that can be walked, driven or ridden on. Very differently, the purpose of the Osborn plastic is to be formable and have the matrix material adhere well to the reinforcement material. Osborn does not teach to use the polymer for any kind of wear-resistant coating, and there is nothing in Osborn that would make it pertinent to the problem of making a wear-resistant coating. Therefore, the Osborn reference is not reasonably pertinent to the problem the invention was attempting to solve, and Osborn is therefore not analogous prior art.

Conclusions

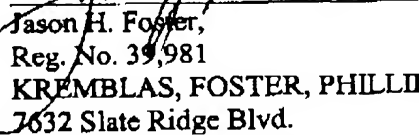
Amended claim 14 is now allowable, as is claim 35, which is similar to claim 14 but further limited to solid substrates. All claims dependent upon claim 14 are allowable.

Applicant respectfully requests consideration and allowance of claims 19-28, which are dependent upon the allowable generic claim 14.

The Commissioner is authorized to charge Deposit Account No. 13-3393 for any insufficient fees under 37 CFR §§ 1.16 or 1.17, or credit any overpayment of fees.

Respectfully submitted,

01 October 2003
Date of Signature


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Enclosure: Transmittal Form
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